

NORTHERN AMATEUR RELAY COUNCIL OF CALIFORNIA, INC.
P.O. BOX 60531
SUNNYVALE, CA 94088-0531

6-10-94

In the matter of:

Allocation of Spectrum Below
5 GHz Transferred from
Federal Government Use

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ET Docket No. 94-32

NOTICE OF INQUIRY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
Washington, DC 20554

Re: Reallocation from government service to non-government service of spectrum shared with the Amateur Radio Service.

Dear Mr. Caton,

The Northern Amateur Relay Council of California, Inc. (NARCC) is a voluntary association of over 250 owners of Amateur Radio Service fixed and mobile relay stations in Northern and Central California. NARCC grew out of the original California Amateur Relay Council. It was formed in the early 70's in response to the desires of repeater and remote base operators to mutually coordinate channel assignments long before the FCC considered the matter. We are filing comments pertaining to the proposed reallocation, how it will directly affect us and suggestions for implementing the directives of Title IV with less adverse impact on our present and future operations.

NARCC is recognized as the official coordinator for all repeater sub-bands in our area for frequencies 10 meters and above. We hold regular meetings, publish a quarterly newsletter and an annual directory of our repeater database. We along with our counterpart in Southern California, SCRRBA, are active participants in the band planning process. Our database and current band plans are on file with the American Radio Relay League, Inc. (ARRL) to be used as part of the national band planning process.

2.3-2.45 GHZ BAND PLAN, PRESENT AND FUTURE USAGE

Earlier this year, we were in the process of re-defining our plan to complement that adopted by SCRRBA in 1992 when news of the proposed re-assignments surfaced. Currently, the Amateur Radio Service has access to a 10 MHz lower segment (2300-2310 MHz) and a 60 MHz upper segment (2390-2450 MHz). Due to congestion in the lower UHF bands, it was (and still is) our intent to further develop the 2.3-2.45 GHz band for the following uses:

- A. Weak Signal - Amateur Satellite, moonbounce (EME) and terrestrial propagation experiments.

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- B. Narrow-band Point-to-Point Terrestrial Relay - Analog and digital voice using channels 50 KHz or less.
- C. Wide-band Point-to-Point Terrestrial Relay - Analog and digital data using channels greater than 50 KHz.
- D. Point-to-Point Television (ATV)

Uses B. and C. involve paired frequencies with spacings from 40 MHz to 150 MHz. Logic would dictate using a portion of the lower segment (2300-2310) and the upper segment (2390-2450) for this. The proposed NTIA reallocation will effectively exclude using the upper band below 2417 MHz. What lies above there would have to be shared with ATV and be subjected to increasingly higher amounts of interference as the 2450 MHz ISM center frequency is approached.

Our proposed band plan calls for a total of 12 MHz of spectrum to be allocated to point-to-point voice and data uses. Ideally, this would be split in two equal segments, separated by the band forbidden to amateurs (2310-2390 MHz).

With ATV likely to evolve to a digitally compressed format, we feel it has a better chance to co-exist in the higher interference part of the spectrum near 2450 MHz. As a compromise, we would reduce the number of ATV channel assignments to 2. They would occupy the band from 2427-2450 MHz. If the re-allocation could be modified to 2393-2400 and 2409-2427, this would provide for both a 3 MHz high-band pairing slot and increased bandwidth for amateur satellite activities in the 2400-2409 MHz slot. Another viable alternative is to return several megahertz at the high end of the 2310-2390 band to shared use with the Amateur Radio Service. It was taken away to accommodate aeronautical flight test telemetry. To our knowledge, there is no current use of the spectrum for that purpose. The re-utilization of empty spectrum is clearly in the Public Interest.

To summarize, the NTIA did not fully explore the actual usage of the band segments. They also did not take into account the adverse impact on our present and future operations before rendering their decision on reallocation. Both of these were clear mandates of the Omnibus Budget Act.

TITLE IV, ITS GOALS AND THE NTIA REPORT

The intent of the Omnibus Budget Reconciliation Act of 1993 (Title IV) was and is to reallocate 200 MHz of spectrum from Federal use to the private sector. This is to be done over a period 15 years. Our comments are requested on the first phase of the frequency reallocation. Of the 50 MHz of spectrum proposed, 25 MHz are shared with the Amateur Radio Service and thus we are directly affected. Title IV states one of its goals is to provide for introduction of new services and enhancement of existing services. The directive is also very specific in regard to making sure the NTIA consider the impact of the proposed reallocation on the Amateur Radio Service.

To be fair, the NTIA did a good job in analyzing the financial cost to the Federal Government in considering which band or bands should be reallocated to Non-Federal use. However, they did not spend enough effort in determining the impact on the Amateur Radio Service. There are many highly visible amateur entities whom they should have contacted to obtain information about our present and planned activities in the affected bands. We are not aware that they did this. Their report is conspicuously silent with regard to our many

uses for the spectrum. On the contrary, there is a comment the bands are "sparsely used".

THE VALUE OF THE 2.3-2.45 GHZ BAND TO AMATEURS

As the lower bands become more congested, there is a natural migration upward. It is slow at first, based on a misconception that reliable long-distance communication is not practical. My experience working for a microwave manufacturer, has borne this out at several times in my career. There was a time when using 13 GHz over distances of greater than 5 miles was considered very risky. Now we use 23 GHz on paths twice as long.

One of our most important directives is to provide emergency communications when most of the commercial systems are off-line. This was evidenced during the natural disasters we've experienced in the last several years. We plan to develop the 2.3-2.45 GHz band to provide higher capacity trunking of traffic.

The use of 420 MHz stand-alone links and ATV in the UHF band is of particular concern. We are endeavoring to move much of these into 2.3 GHz. This activity represents the largest planned growth activity we have at 2.3 GHz. Propagation is quite reliable on line-of-sight paths. Antennas and coax for 2.3 GHz are still within our economic reach.

The NTIA was informed about our extensive use of the 420 MHz band by the ARRL but chose to ignore it. The only reason we can think of is that our list of linking channels is not published in the ARRL Repeater Directory.

ISM AND PART 15 INTERFERENCE

With our technical expertise and inclination to experiment, we feel the amateur community is better equipped to cope with ISM interference and Part 15 users. Commercial entities representing emerging technologies may not have the patience or money to overcome the problems of operation near these potential sources of interference. It is likely their devices will have low power output and very sensitive receivers. ISM interference has been known to be quite intense in metropolitan areas. Commercial high power FM microwave circuits (with ERP's in excess of 1000 watts) have been rendered useless on many occasions in the presence of ISM interference. Part 15 devices, although low in power, may cause considerable problems to the new services. There may be an equal (or greater) amount of harm caused to them by the new technology devices. For these reasons, we feel it is inappropriate to assign the new services spectrum in the 2400-2450 MHz band.

SHARING WITH COMMERCIAL SERVICES

The Amateur Radio Service has successfully co-existed with the Federal Government since the late 40's. There are several reasons. We are easy to identify and locate should problems arise. Every transmission gives our call sign and the Callbook is updated regularly with our names and addresses. As a secondary user, we must tolerate any interference caused to our operations by Government transmissions. This has not been a problem.

The prospect of our sharing with commercial users is not likely to be so harmonious. There will be several "layers" of entities involved between those

who have the capability to investigate and correct interference problems and users of the new devices. Communication between the groups is not likely.

As the award of frequencies to commercial users will be the result of a bidding war, there will be both time and financial pressures to get into operation and start generating revenue. If and when interference due to co-existence occurs, the spirit of cooperation and use of logic may not always prevail.

Therefore, it is our feeling and that of a number of other commenters that spectrum sharing with the new commercial services will be impractical.

COMMENT ON SPECIFIC QUESTIONS RAISED BY THE NOTICE OF INQUIRY

a) The spectrum identified for immediate reallocation may have potential for promoting economic growth and enhancing services but at the expense of the Amateur Radio Service. We perform many vital services to the general public not available from any other source. The NTIA did not weigh that against what might come from the reallocation.

b) This question refers to what restrictions and limitations should be placed on the uses of these bands. Simply stated, any new services should not cause harmful interference to existing services in the shared bands, adjacent bands and harmonically related bands. Competition will take the form of "what can we do to gain an edge?" If the answer is higher transmit power and/or lower receive sensitivity, the result will likely be interference to other services.

c) Will the recommended reallocation avoid excessive disruption of amateur service licensees? Definitely not! The NTIA investigation was seriously deficient in this area. They did not check with any coordinating amateur body in the Western United States that we are aware of. Had they done so, they would have realized the severity of the likely disruption of service, present and future. Also, restricting amateur satellite operation to 2400-2402 MHz is most inadequate by all logical standards.

d) Spectrum sharing issue. NO! For reasons identified on the previous page.

e) Interference potential by ISM to commercial users in the 2402-2417 MHz band. There is a strong likelihood of interference in the larger metropolitan areas. The closer one gets to 2450 MHz, the more interference is likely. There will be an immediate conflict since the first areas commercial entities will develop are the potentially most lucrative metropolitan markets. The impact by sharing with Part 15 devices boils down to which sector will inflict the most harm to which. If Part 15 users equipment is interfered with, they may simply feel their communications "toy" is broke and try to return it for another or refund. All in all, with the very real possibility of interference every which way, it seems illogical to go forward with the plan.

f) The public safety question. Will the proposed reallocation hinder vital communications? Yes. The Amateur Radio Service has as one of its 5 primary directives, that of providing emergency communication services during periods of natural disasters. We are better equipped to do this than any other organization. We have regular drills at the local level. In June, a "Field Day" contest is held where all amateurs are encouraged to set up operations at remote locations with independent power. **This activity has been properly acknowledged in both the Budget Act and the NTIA report.** Field Day is fun and very competitive. However, it also provides a sound foundation for what we can

do when disaster strikes.

Tied to providing emergency communications is the use of the 2.3-2.45 GHz band for long distance linking. It was vital to our success in providing the only reliable means of communicating into and out of California during the fires and earthquakes in recent years. Removing portions of our spectrum will have a serious impact on our ability to provide these vital services.

g) Is the proposed commercial spectrum interference-free enough for use by biomedical telemetry devices? The answer to this question is unclear at this time. Much will depend on the devices themselves and their ability to function in the presence of heavy ISM radiation and sporadic Part 15 device activities.

h) Would it be advantageous to delay licensing some or all of the proposed 50 MHz block for 3 years and then be able to make larger blocks available? Yes. Especially since the additional spectrum proposed for reallocation in 3 years is just as important to the Amateur Radio Service as the current 25 MHz in the 2.3-2.45 band. Our concerns and suggestions apply equally to the 2300-2310 and 2390-2400 band segments. Loss of them would virtually eliminate 3 out of the 4 primary uses of this band by amateurs.

This week, we learned the FCC has adopted a compromise with the satellite industry to relinquish some frequencies in an attempt to consolidate spectrum for Personal Communications Services (PCS). As it stands now, PCS allocations are scattered in 3 separate bands. This could have a major impact on how much spectrum at 2.3 GHz needs to be converted from Government to Private. Also, several of the proposed suppliers of new technology devices have expressed concern over the small segmented bands. The devices will have to cover all the bands to be of value. This will compromise performance and drive up the cost. This whole issue of contiguous band segments warrants more study.

For these reasons, we strongly urge the Commission to delay any reallocation until further investigations are conducted.

CONCLUSIONS

Our conclusions are consistent with those presented to the NTIA by our Southern California counterpart, SCRRBA:

1) Reallocation of spectrum in the 2.3-2.45 GHz band from government to private use will cause significant disruption of present amateur activities in the band and preclude meaningful future expansion and development using digital compression technologies. Basically, it will stop us "dead in our tracks".

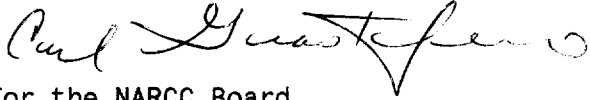
2) Sharing between commercial users and amateur licensees is not viable.

3) If we are displaced, suitable alternate nearby spectrum should be made available to us. **This is mandated by Title IV.**

4) The NTIA Preliminary Spectrum Reallocation Report did not research the actual and future use of the 2.3-2.45 GHz band by the Amateur Radio Service and did not take into account the impact of its loss on our operations. We are a Federally licensed body and operate in the Public Interest. The proposed reallocation does not serve the Public Interest when all facets of its implementation are weighed.

5) In light of all the facts, the FCC really has no choice but to grant the Amateur Radio Service primary status in the 2300-2310 and 2390-2450 MHz band until the mandates of Title IV are satisfied. When suitable replacement spectrum is made available to the Amateur Radio Service, we will strongly support reallocation of frequencies for commercial use. It's a win-win situation.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Carl Guastaferrero", with a small circle at the end of the signature.

For the NARCC Board

Carl Guastaferrero, Board Member